

## CLAIMS

- 1    1.(withdrawn)    A composition comprising a modified nucleotide including a molecular  
2    and/or atomic tag, where the nucleotide alters base incorporation fidelity in a nucleotide  
3    polymerizing agent relative to a base incorporation fidelity of the agent in the absence of the  
4    modified nucleotide.
- 1    2.(withdrawn)    The composition of claim 1, wherein the modified nucleotide comprises  
2    a  $\beta$  and/or  $\gamma$  phosphate modified nucleotide.
- 1    3.(withdrawn)    The composition of claim 1, wherein the modified nucleotide comprises  
2    a  $\beta$  phosphate modified nucleotide.
- 1    4.(withdrawn)    The composition of claim 1, wherein the modified nucleotide comprises  
2    a  $\gamma$  phosphate modified nucleotide.
- 1    5.(withdrawn)    The composition of claim 4, wherein the tag comprises a molecule.
- 1    6.(withdrawn)    The composition of claim 5, wherein the tag is ANS.
- 1    7.(previously amended)    A method comprising the step of adding a modified nucleotide  
2    including a molecular and/or atomic tag to a nucleotide polymerization medium comprising  
3    a nucleotide polymerizing agent, where the modified nucleotide alters base incorporation  
4    fidelity of a nucleotide polymerizing agent relative to a base incorporation fidelity of the  
5    polymerizing agent in the absence of the modified nucleotide.
- 1    8.(original)    The method of claim 7, wherein the modified nucleotide comprises a  $\beta$  and/or  
2     $\gamma$  phosphate modified nucleotide.

1       9.(original) The method of claim 7, wherein the modified nucleotide comprises a  $\beta$   
2       phosphate modified nucleotide.

1       10.(original) The method of claim 7, wherein the modified nucleotide comprises a  $\gamma$   
2       phosphate modified nucleotide.

1       11.(original) The method of claim 10, wherein the tag comprises a molecule.

1       12.(previously amended) The method of claim 11, wherein the tag comprises  
2       aminonaphthalene-1-sulfonate (ANS).

1       13.(previously amended) A method comprising the step of adding a modified nucleotide  
2       including a molecular and/or atomic tag to an assay for extending a nucleotide sequence,  
3       where the modified nucleotide alters base incorporation fidelity of a nucleotide polymerizing  
4       agent relative to a base incorporation fidelity of the polymerizing agent in the absence of the  
5       modified nucleotide, and the assay is selected from the group consisting of genotyping for  
6       *in vitro* reproductive methods (human and other organisms); single nucleotide polymorphism  
7       (SNP) detection; DNA sequencing; RNA sequencing; single nucleotide extension assays;  
8       amplified DNA product assays; rolling circle product assays; PCR product assays; allele-  
9       specific primer extension assays; single-molecule arrays (DNA, RNA, protein) assays; and  
10      drug toxicity evaluation assays.

1       14.(withdrawn) A method for making blunt-ended fragments comprising the steps of  
2       amplifying a DNA fragment in the presence of a nucleotide including a molecular and/or  
3       atomic tag on a  $\gamma$  phosphate group and/or a base moiety, where the tag alters fidelity of base  
4       incorporation and decreases or eliminates non-templated addition of a base to the 3' end of  
5       the DNA fragment being amplified.

1       15.(original) A kit for performing a nucleotide polymerizing reaction comprising  
2       polymerizing reagents and at least one modified nucleotide including an atomic and/or  
3       molecular tag, where the modified nucleotide alters extension fidelity.

1       16.(withdrawn) A method of inhibiting or preventing pyrophosphorolysis during  
2       synthesis of a nucleic acid molecule, said method comprising  
3           (a) combining a primer with a nucleic acid template under conditions sufficient to form a  
4       hybridized product; and  
5           (b) incubating the hybridized product with a polymerase in the presence or absence of an  
6       enzyme selected from the group consisting of a pentosyltransferase, a phosphotransferase  
7       with alcohol group as acceptor, a nucleotidyltransferase, and a carboxy-lyase, under  
8       conditions sufficient to form a second nucleic acid molecule complementary to all or a  
9       portion of the nucleic acid template,

10       where a tagged nucleotide comprises an atomic and/or molecular tag or moiety  
11       attached to and/or associated with a  $\beta$  and/or  $\gamma$ -phosphate and/or a base moiety of the  
12       nucleotide is added at either or both steps to inhibit or prevent pyrophosphorolysis during  
13       synthesis of a nucleic acid molecule.

1       17.(withdrawn) A composition comprising a nucleotide including a molecular and/or  
2       atomic tag on a phosphate group adapted to alter the fidelity of viral replication.

1       18.(withdrawn) The composition of claim 17, wherein the virus is HIV.

1       19.(withdrawn) A method for increasing the fidelity of replication comprising  
2       administering an therapeutically effective amount of a nucleotide including a molecular  
3       and/or atomic tag on a  $\gamma$  phosphate group to an animal including a human, where the  
4       nucleotide is designed to increase base incorporation fidelity during replication.

1       **20.(withdrawn)**     The method of claim 19, wherein the replication is caused by an HIV  
2       virus.

1       **21.(previously added)**     The method of claim 7, wherein the tag comprises a molecule  
2       covalently bonded to the modified nucleotide through a linker.

1       **22.(previously added)**     The method of claim 7, wherein the tag comprises a molecule  
2       covalently bonded to the modified nucleotide.

1       **23.(previously added)**     The method of claim 11, wherein the molecule comprises a  
2       fluorophore selected from the group consisting of 4-acetamido-4'isothiocyanatostilbene-  
3       2,2'disulfonic acid; acridine and derivatives: acridine, acridine isothiocyanate; 5- (2'-  
4       aminoethyl) aminonaphthalene-1-sulfonic acid (EDANS); 4-amino – 3-vinylsulfonyl) phenyl]  
5       naphthalimide-3,5 disulfonate; –(4-anilino-1naphthyl) maleimide; anthranilamide; BODIPY;  
6       Brilliant Yellow; coumarin and derivatives: coumarin, 7-amino-4-methylcoumarin (AMC,  
7       Coumarin 120), 7-amino-4trifluoromethylcouluarin (Coumaran 151); cyanine dyes;  
8       cyanosine; 4', 6-diaminidino-2phenylindole (DAPI); 5', 5"-dibromopyrogallol-  
9       sulfonaphthalein (Bromopyrogallol Red); 7-diethylamino-3- (4'-isothiocyanatophenyl)-4-  
10      methylcoumarin; diethylenetriamine pentaacetate; 4,4'-diisothiocyanatodihydro-stilbene-2,2'-  
11      disulfonic acid; 4,4' diisothiocyanatostilbene-2,2'-disulfonic acid; 5-dimethylamino  
12      naphthalene-1-sulfonyl chloride (DNS, dansylchloride); 4-dimethylaminophenylazophenyl-  
13      4'-isothiocyanate (DABITC); eosin and derivatives: eosin, eosin isothiocyanate, erythrosin  
14      and derivatives: erythrosin B, erythrosin, isothiocyanate; ethidium; fluorescein and  
15      derivatives: 5carboxyfluorescein (FAM), 5- (4, 6-dichlorotriazin-2-yl) aminofluorescein  
16      (DTAF), 2', 7'dimethoxy-4'5'-dichloro-6-carboxyfluorescein(JOE), fluorescein, fluorescein  
17      isothiocyanate, QFITC, (XRITC); fluorescamine; IR144; IR1446; Malachite Green  
18      isothiocyanate; 4-methylumbelliferoneortho cresolphthalein; nitrotyrosine; pararosaniline;

19 Phenol Red; B-phycoerythrin; o-phthaldialdehyde; pyrene and derivatives: pyrene  
20 butyrate, succinimidyl 1-pyrene; butyrate quantum dots; Reactive Red 4 (CibacronTM  
21 Brilliant Red 3B-A) rhodamine and derivatives: 6-carboxy-X-rhodamine (ROX),  
22 6carboxyrhodamine (R6G), lissamine rhodamine B sulfonyl chloride rhodamine (Rhod),  
23 rhodamine B, rhodamine 123, rhodamine X isothiocyanate, sulforhodamine B,  
24 sulforhodamine 101, sulfonyl chloride derivative of sulforhodamine 101 (Texas Red); N,N,  
25 N', N'-tetramethyl-6-carboxyrhodamine (TAMRA); tetramethyl rhodamine; tetramethyl  
26 rhodamine isothiocyanate (TRITC); riboflavin; rosolic acid; terbium chelate derivatives; Cy  
27 3; Cy 5; Cy 5.5; Cy 7; IRD 700; IRD 800; La Jolla Blue; phthalo cyanine; and naphthalo  
28 cyanine.

1 24.(previously added) The method of claim 11, wherein the molecule is selected from  
2 the group consisting of alkyl groups having between 1 and 30 carbon atoms, aryl groups  
3 having between about 6 and about 40 carbon atoms, or alkaryl and aralkyl groups having  
4 between about 7 and about 40 carbon atoms, or mixture or combinations thereof, where the  
5 carbon atoms are replace by one or more hetero atoms in the structure provided the structure  
6 represents a stable molecular system, where the hetero atoms selected from the group  
7 consisting of P, S, Si, N, and O.

1 25.(new) The method of claim 11, wherein the molecule is selected from the group  
2 consisting of 4-aminophenol, 6-aminonaphthol, 4-nitrophenol, 6-nitronaphthol, 4-  
3 methylphenol, 6-chloronaphthol, 4-methoxyphenol, 6-bromonaphthol, 4-chlorophenol, 6-  
4 iodonaphthol, 4-bromophenol, 4, 4'-dihydroxybiphenyl, 4-iodophenol, 8-hydroxyquinoline,  
5 4-nitronaphthol, 3-hydroxypyridine, 4-aminonaphthol, umbelliferone, 4-methylnaphthol,  
6 resorufin, 4-methoxynaphthol, 8-hydroxypyrene, 4-chloronaphthol, 9-hydroxyanthracene, 4-  
7 bromonaphthol, 6-nitro-9-hydroxyanthracene, 4-iodonaphthol, 3-hydroxyflavone, 6-  
8 methylnaphthol, fluorescein, 6-methoxynaphthol, 3-hydroxybenzoflavone, 1-hydroxy-2-  
9 propyne, 1-hydroxy-4-pentyne, 1-hydroxy-3-butyne, 1-hydroxy-5-hexyne, Methanol, Ethanol,

10 Propanol, Isopropanol, Butanol, Tert-butanol, Hexanol, Cyclohexanol, Heptanol, Octanol,  
11 Decanol, Undecanol, Dodecanol, 1-acetoxymethanol (CH<sub>3</sub>OCCH<sub>2</sub>-O-NTP), 2-  
12 acetoxymethanol, 3-acetoxymethanol, 4-acetoxymethanol, 5-acetoxypentanol, 6-acetoxymethanol,  
13 2-nitroethanol, 3-nitropropanol, 4-nitrobutanol, 5-nitropentanol, 5-nitrohexanol, 1-hydroxy-3-  
14 propene, 1-hydroxy-2-cyclohexene, 1-hydroxy-4-butene, 1-hydroxy-3-propaldehyde, 1-  
15 hydroxy-5-pentene, 1-hydroxy-4-butanaldehyde, 1-hydroxy-6-hexene, 1-hydroxy-3-  
16 Butanone, Phenol, 4-methyl-3-hydroxypyridine, 4-Carboxyphenol, 5-methoxy-3-  
17 hydroxypyridine, 4-Acetoxymethylphenol, 5-nitro-3-hydroxypyridine, 4-nitrophenol, 5-  
18 acetoxymethyl-3-hydroxypyridine, 4-methylphenol, 6-methyl-8-hydroxyquinoline, 4-  
19 methoxyphenol 6-methoxy-8-hydroxyquinoline, 4-ethylphenol, 4-methyl-8-  
20 hydroxyquinoline, 4-butylphenol, 6-nitro-8-hydroxyquinoline, naphthol, 4-acetoxymethyl-8-  
21 hydroxyquinoline, 4 or 6 or 8 methylnaphthol pyrene, 4 or 6 or 8 methoxynaphthol, 6-methyl-  
22 8-hydroxypyrene, 4 or 6 or 8 nitronaphthol, 6-ethyl-8-hydroxypyrene, 4 or 6 or 8  
23 ethylnaphthol, 6-nitro-8-hydroxypyrene, 4 or 6 or 8 butylnaphthol 6-  
24 (carboxysuccinimidylester) fluorescein, 4 or 6 or 8 acetoxymethylnaphthol, 6-carboxymethyl-  
25 2,7-dichlorofluorescein, Methanol Cyclohexanol, 2-carboxyethanol, 3-carboxypropanol, 4-  
26 carboxybutanol, 2-hydroxyethanol, 3-hydroxypropanol, 4-hydroxybutanol, 2-aminoethanol,  
27 2-nitroethanol, 3-aminopropanol, 3-nitropropanol, 4-aminobutanol, and 4-nitrobutanol.

1 26.(previously added) The method of claim 10, wherein the modified nucleotide is  
2 selected from the group consisting of Adenosine-5'- ( $\gamma$ -ANS) triphosphate, Guanosine-5'-  
3 ( $\gamma$ -ANS) triphosphate, Cytosine-5'- ( $\gamma$ -ANS) triphosphate, Thymidine-5'- ( $\gamma$ -ANS)  
4 triphosphate, Adenosine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-  
5 iodonaphthyl), Guanosine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate, triphosphate Adenosine-5'- ( $\gamma$ -  
6 6-methylnaphthyl) triphosphate, Cytosine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate, Thymidine-5'-  
7 ( $\gamma$ -4-nitrophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -6-methoxynaphthyl) triphosphate, Uracil-5'-  
8 ( $\gamma$ -4-nitrophenyl) triphosphate, 3'-azido-3'-deoxythymidine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate,  
9 Adenosine-5'- ( $\gamma$ -6-aminonaphthyl) triphosphate, 3'-azido-2', 3'-dideoxythymidine-5'- ( $\gamma$ -4-

10 nitrophenyl)triphosphate, Adenosine-5'-( $\gamma$ -6-nitronaphthyl) triphosphate, 2', 3'-didehydro-2',  
11 3'-dideoxythymidine-5'-( $\gamma$ -4-nitrophenyl)triphosphate, Adenosine-5'-( $\gamma$ -6-chloronaphthyl)  
12 triphosphate, Adenosine-5'-( $\gamma$ -4-aminophenyl) triphosphate, Adenosine-5'-( $\gamma$ -6-  
13 bromonaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -4-methylphenyl) triphosphate, Adenosine-5'-( $\gamma$ -6-  
14 ( $\gamma$ -6-iodonaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -4-methoxyphenyl) triphosphate,  
15 Adenosine-5'-( $\gamma$ -4'-hydroxybiphenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-chlorophenyl)  
16 triphosphate, Adenosine-5'-( $\gamma$ -8-quinolyl) triphosphate, Adenosine-5'-( $\gamma$ -4-bromophenyl)  
17 triphosphate, Adenosine-5'-( $\gamma$ -3-pyridyl) triphosphate, Adenosine-5'-( $\gamma$ -umbelliferone),  
18 Adenosine-5'-( $\gamma$ -4-iodophenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-nitronaphthyl)  
19 triphosphate, Adenosine-5'-( $\gamma$ -resorufin) triphosphate, Adenosine-5'-( $\gamma$ -pyrene)  
20 triphosphate, Adenosine-5'-( $\gamma$ -4-aminonaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -anthracene)  
21 triphosphate, Adenosine-5'-( $\Gamma$ -6-nitroanthracene) triphosphate, Adenosine-5'-( $\gamma$ -4-  
22 methylnaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -flavonyl) triphosphate, Adenosine-5'-( $\gamma$ -4-  
23 methoxynaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -fluorescein) triphosphate, Adenosine-5'-( $\gamma$ -  
24 benzoflavone) triphosphate, Adenosine-5'-( $\gamma$ -4-chloronaphthyl) triphosphate, Adenosine-  
25 5'-( $\gamma$ -(4-nitrophenyl)- $\gamma'$ -(4-aminophenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-  
26 bromonaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -(4-nitrophenyl)- $\gamma'$ -(4-nitronaphthyl)  
27 triphosphate, Adenosine-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -  
28 acetoxypropyl)triphosphate, Guanosine-5'-( $\gamma$ -methyl) triphosphate, Cytosine-5'-( $\gamma$ -methyl)  
29 triphosphate, Adenosine-5'-( $\gamma$ -acetoxymethyl)triphosphate (CH<sub>3</sub>OCC<sub>2</sub>H<sub>5</sub>-O-NTP),  
30 Thymidine-5'-( $\gamma$ -methyl) triphosphate, Uracil-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -  
31 acetoxyethyl) triphosphate, 3'-azido-3'-deoxythymidine-5'-( $\gamma$ -methyl)triphosphate,  
32 Adenosine-5'-( $\gamma$ -acetoxybutyl)triphosphate, 3'-azido-2', 3'-dideoxythymidine-5'-( $\gamma$ -methyl)  
33 triphosphate, Adenosine-5'-( $\gamma$ , acetoxypentyl) triphosphate, 2', 3'-didehydro-2', 3'-  
34 dideoxythymidine-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -acetoxyhexyl) triphosphate,  
35 Adenosine-5'-( $\gamma$ -ethyl) triphosphate, Adenosine-5'-( $\gamma$ -2-nitroethyl) triphosphate,  
36 Adenosine-5'-( $\gamma$ -propyl) triphosphate, Adenosine-5'-( $\gamma$ -4-butyl) triphosphate, Adenosine-5'-( $\gamma$ -  
37 ( $\gamma$ -3-nitropropyl) triphosphate, Adenosine-5'-( $\gamma$ -hexyl) triphosphate, Adenosine-5'-( $\gamma$ -octyl)

38 triphosphate, Adenosine-5'- ( $\gamma$ -4-nitrobutyl)triposphate, Adenosine-5'- ( $\gamma$ -decyl)  
39 triphosphate, Adenosine-5'- ( $\gamma$ -dodecyl) triphosphate, Adenosine-5'- ( $\gamma$ -5-  
40 nitropentyl)triposphate, Adenosine-5'- ( $\gamma$ -isopropyl) triphosphate, Adenosine-5'- ( $\gamma$ -tert-  
41 butyl) triphosphate, Adenosine-5'- ( $\gamma$ -methyl)- ( $\gamma'$ -ethyl) triphosphate, Adenosine-5'- ( $\gamma$ -  
42 cyclohexyl) triphosphate, Adenosine-5'- ( $\gamma$ -methyl)- ( $\gamma'$ -propyl) triphosphate, Adenosine-5'-  
43 ( $\gamma$ -2-propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -3-butenyl) triphosphate, Guanosine-5'- ( $\gamma$ -2-  
44 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-pentenyl) triphosphate, Cytosine-5'- ( $\gamma$ -2-  
45 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -5-hexenyl) triphosphate, Thymidine-5'- ( $\gamma$ -2-  
46 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -cyclohexenyl) triphosphate, Uracil-5'- (7-2-  
47 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -3-propanaldehyde) triphosphate, 3'-azido-3'-  
48 deoxythymidine-5'- ( $\gamma$ -2-propenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-butanaldehyde)  
49 triphosphate, 3'-azido-2',3'-dideoxythymidine-5'- ( $\gamma$ -2-propenyl) triphosphate, Adenosine-5'-  
50 ( $\gamma$ -3-butanone) triphosphate, 2', 3'-didehydro-2', 3'-dideoxythymidine-5'- ( $\gamma$ -2-propenyl)  
51 triphosphate, Adenosine-5'- ( $\gamma$ -2-propynyl) triphosphate, 3'-azido-2', 3'-dideoxythymidine-5'-  
52 ( $\gamma$ -2-propynyl) triphosphate, Guanosine-5'- ( $\gamma$ -2-propynyl) triphosphate, Cytosine-5'- ( $\gamma$ -2-  
53 propynyl) triphosphate, 2', 3'-didehydro-2', 3'-dideoxythymidine-5'- ( $\gamma$ -2-propynyl)  
54 triphosphate Thymidine 5'- ( $\gamma$ -2-propynyl) triphosphate, Uracil-5'- ( $\gamma$ -2-propynyl)  
55 triphosphate, Adenosine-5'- ( $\gamma$ -3-butynyl) triphosphate, 3'-azido-3'-deoxythymidine-5'- ( $\gamma$ -2-  
56 propynyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-pentynyl) triphosphate, Adenosine-5'- ( $\gamma$ -5-  
57 pentynyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (4 or 6  
58 or 8 acetoxymethyl naphthyl) triphosphate, Guanosine-5'- ( $\gamma$ -4-phenyl) triphosphate,  
59 Cytosine-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (4-methylpyridyl)triposphate,  
60 Thymidine-5'- ( $\gamma$ -4-phenyl) triphosphate, Uracil-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'-  
61 ( $\gamma$ - (5-methoxypyridyl)triposphate, 3'-azido-3'-deoxythymidine-5'- ( $\gamma$ -4-phenyl)  
62 triphosphate, Adenosine-5'- ( $\gamma$ - (5-nitropyridyl)triposphate, 3'-azido-2',3'-dideoxythymidine-  
63 5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (5-acetoxymethylpyridyl) triphosphate, 2',  
64 3'-didehydro-2', 3'-dideoxythymidine-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (6-  
65 methyl-1-quinolyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-carboxyphenyl) triphosphate,

66 Adenosine-5'-( $\gamma$ -(6-methoxy-1-quinolyl)triphosphate, Adenosine-5'-( $\gamma$ -(4-acetoxyethyl)  
67 phenyl) triphosphate, Adenosine-5'-( $\gamma$ -(4-methyl-1-quinolyl)triphosphate, Adenosine-5'-  
68 ( $\gamma$ -4-nitrophenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-methylphenyl)triphosphate, Adenosine-5'-  
69 ( $\gamma$ -(6-nitro-1-quinolyl) triphosphate, Adenosine-5'-( $\gamma$ -4-methoxyphenyl) triphosphate,  
70 Adenosine-5'-( $\gamma$ -(4-acetoxyethylpyrenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-ethylphenyl)  
71 triphosphate, Adenosine-5'-( $\gamma$ -(6-methylpyrenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-  
72 butylphenyl) triphosphate, Adenosine 5'-( $\gamma$ -naphthyl) triphosphate, Adenosine-5'-( $\gamma$ -(6-  
73 ethylpyrenyl) triphosphate, Adenosine-5'-( $\gamma$ -(4 or 6 or 8 methyl naphthyl)triphosphate,  
74 Adenosine-5'-( $\gamma$ -(6-nitropyrenyl) triphosphate, Adenosine-5'-( $\gamma$ -(4 or 6 or 8  
75 methoxynaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -6-(carboxysuccinimidyl fluorescein)  
76 triphosphate, Adenosine-5'-( $\gamma$ -(4 or 6 or 8 nitro naphthyl) triphosphate. Adenosine-5'-( $\gamma$ -6-  
77 carboxymethyl-2, 7-dichlorofluorescein) triphosphate, Adenosine-5'-( $\gamma$ -(4 or 6 or 8 ethyl  
78 naphthyl) triphosphate, Adenosine-5'-( $\gamma$ -4-phenyl)-( $\gamma'$ -4 nitrophenyl) triphosphate,  
79 Adenosine-5'-( $\gamma$ -(4 or 6 or 8 butyl naphthyl)triphosphate, Adenosine-5'-( $\gamma$ -4-phenyl)-( $\gamma'$ -4  
80 aminophenyl)triphosphate, Adenosine-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -3-  
81 aminopropyl) triphosphate, Guanosine-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -4-  
82 aminobutyl) triphosphate, Cytosine-5'-( $\gamma$ -methyl) triphosphate Adenosine-5'-( $\gamma$ -cyclohexyl)  
83 triphosphate, Thymidine-5'-( $\gamma$ -methyl) triphosphate Adenosine-5'-( $\gamma$ -2-carboxyethyl)  
84 triphosphate, Uracil-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -3-  
85 carboxypropyl)triphosphate, 3'-azido-3'-deoxythymidine-5'-(7-methyl) triphosphate,  
86 Adenosine-5'-( $\gamma$ -4-carboxybutyl) triphosphate, 3'-azido-2',3'-dideoxythymidine-5'-( $\gamma$ -  
87 methyl) triphosphate, Adenosine-5'-( $\gamma$ -2-hydroxyethyl) triphosphate, 2',3'-didehydro-2',3'-  
88 dideoxythymidine-5'-( $\gamma$ -methyl)triphosphate, Adenosine-5'-( $\gamma$ -3-hydroxypropyl)  
89 triphosphate, Adenosine-5'-( $\gamma$ -ethyl) triphosphate, Adenosine-5'-( $\gamma$ -propyl) triphosphate,  
90 Adenosine-5'-( $\gamma$ -4-hydroxybutyl) triphosphate, Adenosine-5'-( $\gamma$ -4-butyl) triphosphate,  
91 Adenosine-5'-( $\gamma$ -2-nitroethyl) triphosphate, Adenosine-5'-( $\gamma$ -hexyl) triphosphate,  
92 Adenosine-5'-( $\gamma$ -3-nitropropyl) triphosphate, Adenosine-5'-( $\gamma$ -isopropyl) triphosphate,  
93 Adenosine-5'-( $\gamma$ -4-nitrobutyl) triphosphate, Adenosine-5'-( $\gamma$ -tert-butyl) triphosphate

94 ,Adenosine-5'- ( $\gamma$ -methyl)- ( $\gamma'$ -ethyl)triphosphate, Adenosine-5'- ( $\gamma$ -cyclohexyl) triphosphate,  
95 Adenosine-5'- ( $\gamma$ -2-aminoethyl)triphosphate, and Adenosine-5'- ( $\gamma$ -methyl)- ( $\gamma'$ -propyl)  
96 triphosphate.

1       **27.(previously added)**     The method of claim 13, wherein the tag comprises a molecule  
2 covalently bonded to the modified nucleotide through a linker.

1       **28.(previously added)**     The method of claim 13, wherein the tag comprises a molecule  
2 covalently bonded to the modified nucleotide.

1       **29.(previously added)**     The method of claim 13, wherein the modified nucleotide  
2 comprises a  $\beta$  and/or  $\gamma$  phosphate modified nucleotide.

1       **30.(previously added)**     The method of claim 13, wherein the modified nucleotide  
2 comprises a  $\beta$  phosphate modified nucleotide.

1       **31.(previously added)**     The method of claim 13, wherein the modified nucleotide  
2 comprises a  $\gamma$  phosphate modified nucleotide.

1       **32.(previously added)**     The method of claim 28, wherein the molecule comprises a  
2 fluorophore selected from the group consisting of 4-acetamido-4'isothiocyanatostilbene-  
3 2,2'disulfonic acid; acridine and derivatives: acridine, acridine isothiocyanate; 5- (2'-  
4 aminoethyl) aminonaphthalene-1-sulfonic acid (EDANS); 4-amino -3-vinylsulfonyl phenyl]  
5 naphthalimide-3,5 disulfonate; -(4-anilino-1naphthyl) maleimide; anthranilamide; BODIPY;  
6 Brilliant Yellow; coumarin and derivatives: coumarin, 7-amino-4-methylcoumarin (AMC,  
7 Coumarin 120), 7-amino-4trifluoromethylcouluarin (Coumaran 151); cyanine dyes;  
8 cyanosine; 4', 6-diaminidino-2phenylindole (DAPI); 5', 5"-dibromopyrogallol-  
9 sulfonaphthalein (Bromopyrogallol Red); 7-diethylamino-3- (4'-isothiocyanatophenyl)-4-

10 methylcoumarin; diethylenetriamine pentaacetate; 4,4'-diisothiocyanatodihydro-stilbene-2,2'-  
11 disulfonic acid; 4,4' diisothiocyanatostilbene-2,2'-disulfonic acid; 5-dimethylamino  
12 naphthalene-1-sulfonyl chloride (DNS, dansylchloride); 4-dimethylaminophenylazophenyl-  
13 4'-isothiocyanate (DABITC); eosin and derivatives: eosin, eosin isothiocyanate, erythrosin  
14 and derivatives: erythrosin B, erythrosin, isothiocyanate; ethidium; fluorescein and  
15 derivatives: 5carboxyfluorescein (FAM), 5- (4, 6-dichlorotriazin-2-yl) aminofluorescein  
16 (DTAF), 2', 7'dimethoxy-4'5'-dichloro-6-carboxyfluorescein (JOE), fluorescein, fluorescein  
17 isothiocyanate, QFITC, (XRITC); fluorescamine; IR144; IR1446; Malachite Green  
18 isothiocyanate; 4-methylumbelliferoneortho cresolphthalein; nitrotyrosine; pararosaniline;  
19 Phenol Red; B-phycoerythrin; o-phthaldialdehyde; pyrene and derivatives: pyrene, pyrene  
20 butyrate, succinimidyl 1-pyrene; butyrate quantum dots; Reactive Red 4 (CibacronTM  
21 Brilliant Red 3B-A) rhodamine and derivatives: 6-carboxy-X-rhodamine (ROX),  
22 6carboxyrhodamine (R6G), lissamine rhodamine B sulfonyl chloride rhodamine (Rhod),  
23 rhodamine B, rhodamine 123, rhodamine X isothiocyanate, sulforhodamine B,  
24 sulforhodamine 101, sulfonyl chloride derivative of sulforhodamine 101 (Texas Red); N,N,  
25 N', N'-tetramethyl-6-carboxyrhodamine (TAMRA); tetramethyl rhodamine; tetramethyl  
26 rhodamine isothiocyanate (TRITC); riboflavin; rosolic acid; terbium chelate derivatives; Cy  
27 3; Cy 5; Cy 5.5; Cy 7; IRD 700; IRD 800; La Jolla Blue; phthalo cyanine; and naphthalo  
28 cyanine.

1       33.(currently amended) The method of claim 2827, wherein the molecule linker is  
2 selected from the group consisting of alkyl groups having between 1 and 30 carbon atoms,  
3 aryl groups having between about 6 and about 40 carbon atoms, or alkaryl and aralkyl groups  
4 having between about 7 and about 40 carbon atoms, or mixture or combinations thereof,  
5 where the carbon atoms are replace by one or more hetero atoms in the structure provided the  
6 structure represents a stable molecular system, where the hetero atoms selected from the  
7 group consisting of P, S, Si, N, and O.

1       34.(previously added)     The method of claim 28, wherein the molecule is selected from  
2       the group consisting of 4-aminophenol, 6-aminonaphthol, 4-nitrophenol, 6-nitronaphthol, 4-  
3       methylphenol, 6-chloronaphthol, 4-methoxyphenol, 6-bromonaphthol, 4-chlorophenol, 6-  
4       iodonaphthol, 4-bromophenol, 4, 4'-dihydroxybiphenyl, 4-iodophenol, 8-hydroxyquinoline,  
5       4-nitronaphthol, 3-hydroxypyridine, 4-aminonaphthol, umbelliferone, 4-methylnaphthol,  
6       resorufin, 4-methoxynaphthol, 8-hydroxypyrene, 4-chloronaphthol, 9-hydroxyanthracene, 4-  
7       bromonaphthol, 6-nitro-9-hydroxyanthracene, 4-iodonaphthol, 3-hydroxyflavone, 6-  
8       methylnaphthol, fluorescein, 6-methoxynaphthol, 3-hydroxybenzoflavone, 1-hydroxy-2-  
9       propyne, 1-hydroxy-4-pentyne, 1-hydroxy-3-butyne, 1-hydroxy-5-hexyne, Methanol, Ethanol,  
10      Propanol, Isopropanol, Butanol, Tert-butanol, Hexanol, Cyclohexanol, Heptanol, Octanol,  
11      Decanol, Undecanol, Dodecanol, 1-acetoxyethanol ( $\text{CH}_3\text{OCCCH}_2\text{-O-NTP}$ ), 2-  
12      acetoxyethanol, 3-acetoxypropanol, 4-acetoxybutanol, 5-acetoxypentanol, 6-acetoxyhexanol,  
13      2-nitroethanol, 3-nitropropanol, 4-nitrobutanol, 5-nitropentanol, 5-nitrohexanol, 1-hydroxy-3-  
14      propene, 1-hydroxy-2-cyclohexene, 1-hydroxy-4-butene, 1-hydroxy-3-propaldehyde, 1-  
15      hydroxy-5-pentene, 1-hydroxy-4-butanaldehyde, 1-hydroxy-6-hexene, 1-hydroxy-3-  
16      Butanone, Phenol, 4-methyl-3-hydroxypyridine, 4-Carboxyphenol, 5-methoxy-3-  
17      hydroxypyridine, 4-Acetoxyethylphenol, 5-nitro-3-hydroxypyridine, 4-nitrophenol, 5-  
18      acetoxymethyl-3-hydroxypyridine, 4-methylphenol, 6-methyl-8-hydroxyquinoline, 4-  
19      methoxyphenol 6-methoxy-8-hydroxyquinoline, 4-ethylphenol, 4-methyl-8-  
20      hydroxyquinoline, 4-butylphenol, 6-nitro-8-hydroxyquinoline, naphthol, 4-acetoxyethyl-8-  
21      hydroxyquinoline, 4 or 6 or 8 methylnaphthol pyrene, 4 or 6 or 8 methoxynaphthol, 6-methyl-  
22      8-hydroxypyrene, 4 or 6 or 8 nitronaphthol, 6-ethyl-8-hydroxypyrene, 4 or 6 or 8  
23      ethylnaphthol, 6-nitro-8-hydroxypyrene, 4 or 6 or 8 butylnaphthol 6-(  
24      carboxysuccinimidylester) fluorescein, 4 or 6 or 8 acetoxymethylnaphthol, 6-carboxymethyl-  
25      2,7-dichlorofluorescein, Methanol Cyclohexanol, 2-carboxy ethanol, 3-carboxypropanol, 4-  
26      carboxybutanol, 2-hydroxyethanol, 3-hydroxypropanol, 4-hydroxybutanol, 2-aminoethanol,  
27      2-nitroethanol, 3-aminopropanol, 3-nitropropanol, 4-aminobutanol, and 4-nitrobutanol.

1       35.(previously added)     The method of claim 31, wherein the modified nucleotide is  
2     selected from the group consisting of Adenosine-5'- ( $\gamma$ -ANS) triphosphate, Guanosine-5'-  
3     ( $\gamma$ -ANS) triphosphate, Cytosine-5'- ( $\gamma$ -ANS) triphosphate, Thymidine-5'- ( $\gamma$ -ANS)  
4     triphosphate, Adenosine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-  
5     iodonaphthyl), Guanosine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate, triphosphate Adenosine-5'- ( $\gamma$ -  
6     6-methylnaphthyl) triphosphate, Cytosine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate, Thymidine-5'-  
7     ( $\gamma$ -4-nitrophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -6-methoxynaphthyl) triphosphate, Uracil-5'-  
8     ( $\gamma$ -4-nitrophenyl) triphosphate, 3'-azido-3'-deoxythymidine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate,  
9     Adenosine-5'- ( $\gamma$ -6-aminonaphthyl) triphosphate, 3'-azido-2', 3'-dideoxythymidine-5'- ( $\gamma$ -4-  
10    nitrophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -6-nitronaphthyl) triphosphate, 2', 3'-didehydro-2',  
11    3'-dideoxythymidine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -6-chloronaphthyl)  
12    triphosphate, Adenosine-5'- ( $\gamma$ -4-aminophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -6-  
13    bromonaphthyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-methylphenyl) triphosphate, Adenosine-5'-  
14    ( $\gamma$ -6-iodonaphthyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-methoxyphenyl) triphosphate,  
15    Adenosine-5'- ( $\gamma$ -4'-hydroxybiphenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-chlorophenyl)  
16    triphosphate, Adenosine-5'- ( $\gamma$ -8-quinolyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-bromophenyl)  
17    triphosphate, Adenosine-5'- ( $\gamma$ -3-pyridyl) triphosphate, Adenosine-5'- ( $\gamma$ -umbelliferone),  
18    Adenosine-5'- ( $\gamma$ -4-iodophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-nitronaphthyl)  
19    triphosphate, Adenosine-5'- ( $\gamma$ -resorufin) triphosphate, Adenosine-5'- ( $\gamma$ -pyrene)  
20    triphosphate, Adenosine-5'- ( $\gamma$ -4-aminonaphthyl) triphosphate, Adenosine-5'- ( $\gamma$ -anthracene)  
21    triphosphate, Adenosine-5'- ( $\Gamma$ -6-nitroanthracene) triphosphate, Adenosine-5'- ( $\gamma$ -4-  
22    methylnaphthyl) triphosphate, Adenosine-5'- ( $\gamma$ -flavonyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-  
23    methoxynaphthyl) triphosphate, Adenosine-5'- ( $\gamma$ -fluorescein) triphosphate, Adenosine-5'-  
24    ( $\gamma$ -benzoflavone) triphosphate, Adenosine-5'- ( $\gamma$ -4-chloronaphthyl) triphosphate, Adenosine-  
25    5'- ( $\gamma$ - (4-nitrophenyl)-  $\gamma'$ - (4-aminophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-  
26    bromonaphthyl) triphosphate, Adenosine-5'- ( $\gamma$ - (4-nitrophenyl)-  $\gamma'$ - (4-nitronaphthyl)  
27    triphosphate, Adenosine-5'- ( $\gamma$ -methyl) triphosphate, Adenosine-5'- ( $\gamma$ -  
28    acetoxypropyl) triphosphate, Guanosine-5'- ( $\gamma$ -methyl) triphosphate, Cytosine-5'- ( $\gamma$ -methyl)

29 triphosphate, Adenosine-5'- ( $\gamma$ -acetoxyethyl)triphosphate (CH<sub>3</sub>OOCCH<sub>2</sub>-O-NTP),  
30 Thymidine-5'- ( $\gamma$ -methyl) triphosphate, Uracil-5'- ( $\gamma$ -methyl) triphosphate, Adenosine-5'- ( $\gamma$ -  
31 acetoxyethyl) triphosphate, 3'-azido-3'-deoxythymidine-5'- ( $\gamma$ -methyl)triphosphate,  
32 Adenosine-5'- ( $\gamma$ -acetoxybutyl)triphosphate, 3'-azido-2',3'-dideoxythymidine-5'- ( $\gamma$ -methyl)  
33 triphosphate, Adenosine-5'- ( $\gamma$ , acetoxypentyl) triphosphate, 2', 3'-didehydro-2', 3'-  
34 dideoxythymidine-5'- ( $\gamma$ -methyl) triphosphate, Adenosine-5'- ( $\gamma$ - acetoxyhexyl) triphosphate,  
35 Adenosine-5'- ( $\gamma$ -ethyl) triphosphate, Adenosine-5'- ( $\gamma$ -2-nitroethyl) triphosphate,  
36 Adenosine-5'- ( $\gamma$ -propyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-butyl) triphosphate, Adenosine-5'-  
37 ( $\gamma$ -3-nitropropyl) triphosphate, Adenosine-5'- ( $\gamma$ -hexyl) triphosphate, Adenosine-5'- ( $\gamma$ -octyl)  
38 triphosphate, Adenosine-5'- ( $\gamma$ -4-nitrobutyl)triphosphate, Adenosine-5'- ( $\gamma$ -decyl)  
39 triphosphate, Adenosine-5'- ( $\gamma$ -dodecyl) triphosphate, Adenosine-5'- ( $\gamma$ -5-  
40 nitropentyl)triphosphate, Adenosine-5'- ( $\gamma$ -isopropyl) triphosphate, Adenosine-5'- ( $\gamma$ -tert-  
41 butyl) triphosphate, Adenosine-5'- ( $\gamma$ -methyl)- ( $\gamma'$ -ethyl) triphosphate, Adenosine-5'- ( $\gamma$ -  
42 cyclohexyl) triphosphate, Adenosine-5'- ( $\gamma$ -methyl)- ( $\gamma'$ -propyl) triphosphate, Adenosine-5'-  
43 ( $\gamma$ -2-propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -3-butenyl) triphosphate, Guanosine-5'- ( $\gamma$ -2-  
44 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-pentenyl) triphosphate, Cytosine-5'- ( $\gamma$ -2-  
45 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -5-hexenyl) triphosphate, Thymidine-5'- ( $\gamma$ -2-  
46 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -cyclohexenyl) triphosphate, Uracil-5'- (7-2-  
47 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -3-propanaldehyde) triphosphate, 3'-azido-3'-  
48 deoxythymidine-5'- ( $\gamma$ -2-propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-butanaldehyde)  
49 triphosphate, 3'-azido-2',3'-dideoxythymidine-5'- ( $\gamma$ -2-propenyl) triphosphate, Adenosine-5'-  
50 ( $\gamma$ -3-butanone) triphosphate, 2', 3'-didehydro-2', 3'-dideoxythymidine-5'- ( $\gamma$ -2-propenyl)  
51 triphosphate, Adenosine-5'- ( $\gamma$ -2-propynyl) triphosphate, 3'-azido-2', 3'-dideoxythymidine-5'-  
52 ( $\gamma$ -2-propynyl) triphosphate, Guanosine-5'- ( $\gamma$ -2-propynyl) triphosphate, Cytosine-5'- ( $\gamma$ -2-  
53 propynyl) triphosphate, 2', 3'-didehydro-2', 3'-dideoxythymidine-5'- ( $\gamma$ -2-propynyl)  
54 triphosphate Thymidine 5'- ( $\gamma$ -2-propynyl) triphosphate, Uracil-5'- ( $\gamma$ -2-propynyl)  
55 triphosphate, Adenosine-5'- ( $\gamma$ -3-butynyl) triphosphate, 3'-azido-3'-deoxythymidine-5'- ( $\gamma$ -2-  
56 propynyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-pentynyl) triphosphate, Adenosine-5'- ( $\gamma$ -5-

57 pentynyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (4 or 6  
58 or 8 acetoxymethyl naphthyl) triphosphate, Guanosine-5'- ( $\gamma$ -4-phenyl) triphosphate,  
59 Cytosine-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (4-methylpyridyl)triphosphate,  
60 Thymidine-5'- ( $\gamma$ -4-phenyl) triphosphate, Uracil-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'-  
61 ( $\gamma$ - (5-methoxypyridyl)triphosphate, 3'-azido-3'-deoxythymidine-5'- ( $\gamma$ -4-phenyl)  
62 triphosphate, Adenosine-5'- ( $\gamma$ - (5-nitropyridyl)triphosphate, 3'-azido-2',3'-dideoxythymidine-  
63 5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (5-acetoxymethylpyridyl) triphosphate, 2',  
64 3'-didehydro-2', 3'-dideoxythymidine-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (6-  
65 methyl-1-quinolyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-carboxyphenyl) triphosphate,  
66 Adenosine-5'- ( $\gamma$ - (6-methoxy-1-quinolyl)triphosphate, Adenosine-5'- ( $\gamma$ - (4-acetoxymethyl)  
67 phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (4-methyl-1-quinolyl)triphosphate, Adenosine-5'-  
68 ( $\gamma$ -4-nitrophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-methylphenyl)triphosphate, Adenosine-5'-  
69 ( $\gamma$ - (6-nitro-1-quinolyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-methoxyphenyl) triphosphate,  
70 Adenosine-5'- ( $\gamma$ - (4-acetoxymethylpyrenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-ethylphenyl)  
71 triphosphate, Adenosine-5'- ( $\gamma$ - (6-methylpyrenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-  
72 butylphenyl) triphosphate, Adenosine 5'- ( $\gamma$ -naphthyl) triphosphate, Adenosine-5'- ( $\gamma$ - (6-  
73 ethylpyrenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (4 or 6 or 8 methyl naphthyl)triphosphate,  
74 Adenosine-5'- ( $\gamma$ - (6-nitropyrenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (4 or 6 or 8  
75 methoxynaphthyl) triphosphate, Adenosine-5'- ( $\gamma$ -6- (carboxysuccinimidyl fluorescein)  
76 triphosphate, Adenosine-5'- ( $\gamma$ - (4 or 6 or 8 nitro naphthyl) triphosphate. Adenosine-5'- ( $\gamma$ -6-  
77 carboxymethyl-2, 7-dichlorofluorescein) triphosphate, Adenosine-5'- ( $\gamma$ - (4 or 6 or 8 ethyl  
78 naphthyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-phenyl)- ( $\gamma$ '-4 nitrophenyl) triphosphate,  
79 Adenosine-5'- ( $\gamma$ - (4 or 6 or 8 butyl naphthyl)triphosphate, Adenosine-5'- ( $\gamma$ -4-phenyl)- ( $\gamma$ '-4  
80 aminophenyl)triphosphate, Adenosine-5'- ( $\gamma$ -methyl) triphosphate, Adenosine-5'- ( $\gamma$ -3-  
81 aminopropyl) triphosphate, Guanosine-5'- ( $\gamma$ -methyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-  
82 aminobutyl) triphosphate, Cytosine-5'- ( $\gamma$ -methyl) triphosphate Adenosine-5'- ( $\gamma$ -cyclohexyl)  
83 triphosphate, Thymidine-5'- ( $\gamma$ -methyl) triphosphate Adenosine-5'- ( $\gamma$ -2-carboxyethyl)  
84 triphosphate, Uracil-5'- ( $\gamma$ -methyl) triphosphate, Adenosine-5'- ( $\gamma$ -3-

85 carboxypropyl)triphosphate, 3'-azido-3'-deoxythymidine-5'- (7-methyl) triphosphate,  
86 Adenosine-5'- ( $\gamma$ -4-carboxybutyl) triphosphate, 3'-azido-2',3'-dideoxythymidine-5'- ( $\gamma$ -  
87 methyl) triphosphate, Adenosine-5'- ( $\gamma$ -2-hydroxyethyl) triphosphate, 2',3'-didehydro-2',3'-  
88 dideoxythymidine-5'-( $\gamma$ -methyl)triphosphate, Adenosine-5'- ( $\gamma$ -3-hydroxypropyl)  
89 triphosphate, Adenosine-5'- ( $\gamma$ -ethyl) triphosphate, Adenosine-5'- ( $\gamma$ -propyl) triphosphate,  
90 Adenosine-5'- ( $\gamma$ -4-hydroxybutyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-butyl) triphosphate,  
91 Adenosine-5'- ( $\gamma$ -2-nitroethyl) triphosphate, Adenosine-5'- ( $\gamma$ -hexyl) triphosphate,  
92 Adenosine-5'- ( $\gamma$ -3-nitropropyl) triphosphate, Adenosine-5'- ( $\gamma$ -isopropyl) triphosphate,  
93 Adenosine-5'- ( $\gamma$ -4-nitrobutyl) triphosphate, Adenosine-5'- ( $\gamma$ -tert-butyl) triphosphate  
94 ,Adenosine-5'- ( $\gamma$ -methyl)- ( $\gamma'$ -ethyl)triphosphate, Adenosine-5'- ( $\gamma$ -cyclohexyl) triphosphate,  
95 Adenosine-5'- ( $\gamma$ -2-aminoethyl)triphosphate, and Adenosine-5'- ( $\gamma$ -methyl)- ( $\gamma'$ -propyl)  
96 triphosphate.

1       **36.(previously added)**     The method of claim 7, wherein the polymerizing agent is  
2     selected from the group consisting of naturally occurring or synthetic polymerases and  
3     reverse transcriptases.

1       **37.(previously added)**     The method of claim 13, wherein the polymerizing agent is  
2     selected from the group consisting of naturally occurring or synthetic polymerases and  
3     reverse transcriptases.

1       **38.(previously added)**     The kit of claim 15, wherein the tag comprises a molecule  
2     covalently bonded to the modified nucleotide through a linker.

1       **39.(previously added)**     The kit of claim 15, wherein the tag comprises a molecule  
2     covalently bonded to the modified nucleotide.

1       **40.(previously added)**     The kit of claim 15, wherein the modified nucleotide comprises  
2       a  $\beta$  and/or  $\gamma$  phosphate modified nucleotide.

1       **41.(previously added)**     The kit of claim 15, wherein the modified nucleotide comprises  
2       a  $\beta$  phosphate modified nucleotide.

1       **42.(previously added)**     The kit of claim 15, wherein the modified nucleotide comprises  
2       a  $\gamma$  phosphate modified nucleotide.

1       **43.(previously added)**     The kit of claim 39, wherein the molecule comprises a  
2       fluorophore selected from the group consisting of 4-acetamido-4'isothiocyanatostilbene-  
3       2,2'disulfonic acid; acridine and derivatives: acridine, acridine isothiocyanate; 5- (2'-  
4       aminoethyl) aminonaphthalene-1-sulfonic acid (EDANS); 4-amino – 3-vinylsulfonyl phenyl]  
5       naphthalimide-3,5 disulfonate; –(4-anilino-1naphthyl) maleimide; anthranilamide; BODIPY;  
6       Brilliant Yellow; coumarin and derivatives: coumarin, 7-amino-4-methylcoumarin (AMC,  
7       Coumarin 120), 7-amino-4trifluoromethylcouluarin (Coumaran 151); cyanine dyes;  
8       cyanosine; 4', 6-diaminidino-2phenylindole (DAPI); 5', 5"-dibromopyrogallol-  
9       sulfonaphthalein (Bromopyrogallol Red); 7-diethylamino-3- (4'-isothiocyanatophenyl)-4-  
10      methylcoumarin; diethylenetriamine pentaacetate; 4,4'-diisothiocyanatodihydro-stilbene-2,2'-  
11      disulfonic acid; 4,4' diisothiocyanatostilbene-2,2'-disulfonic acid; 5-dimethylamino  
12      naphthalene-1-sulfonyl chloride (DNS, dansylchloride); 4-dimethylaminophenylazophenyl-  
13      4'-isothiocyanate (DABITC); eosin and derivatives: eosin, eosin isothiocyanate, erythrosin  
14      and derivatives: erythrosin B, erythrosin, isothiocyanate; ethidium; fluorescein and  
15      derivatives: 5carboxyfluorescein (FAM), 5- (4, 6-dichlorotriazin-2-yl) aminofluorescein  
16      (DTAF), 2', 7'dimethoxy-4'5'-dichloro-6-carboxyfluorescein (JOE), fluorescein, fluorescein  
17      isothiocyanate, QFITC, (XRITC); fluorescamine; IR144; IR1446; Malachite Green  
18      isothiocyanate; 4-methylumbelliferoneortho cresolphthalein; nitrotyrosine; pararosaniline;

19 Phenol Red; B-phycoerythrin; o-phthaldialdehyde; pyrene and derivatives: pyrene, pyrene  
20 butyrate, succinimidyl 1-pyrene; butyrate quantum dots; Reactive Red 4 (CibacronTM  
21 Brilliant Red 3B-A) rhodamine and derivatives: 6-carboxy-X-rhodamine (ROX),  
22 6carboxyrhodamine (R6G), lissamine rhodamine B sulfonyl chloride rhodamine (Rhod),  
23 rhodamine B, rhodamine 123, rhodamine X isothiocyanate, sulforhodamine B,  
24 sulforhodamine 101, sulfonyl chloride derivative of sulforhodamine 101 (Texas Red); N,N,  
25 N', N'-tetramethyl-6-carboxyrhodamine (TAMRA); tetramethyl rhodamine; tetramethyl  
26 rhodamine isothiocyanate (TRITC); riboflavin; rosolic acid; terbium chelate derivatives; Cy  
27 3; Cy 5; Cy 5.5; Cy 7; IRD 700; IRD 800; La Jolla Blue; phthalo cyanine; and naphthalo  
28 cyanine.

1 **44.(previously added)** The kit of claim 39, wherein the molecule is selected from the  
2 group consisting of alkyl groups having between 1 and 30 carbon atoms, aryl groups having  
3 between about 6 and about 40 carbon atoms, or alkaryl and aralkyl groups having between  
4 about 7 and about 40 carbon atoms, or mixture or combinations thereof, where the carbon  
5 atoms are replace by one or more hetero atoms in the structure provided the structure  
6 represents a stable molecular system, where the hetero atoms selected from the group  
7 consisting of P, S, Si, N, and O.

1 **45.(previously added)** The kit of claim 39, wherein the molecule is selected from the  
2 group consisting of 4-aminophenol, 6-aminonaphthol, 4-nitrophenol, 6-nitronaphthol, 4-  
3 methylphenol, 6-chloronaphthol, 4-methoxyphenol, 6-bromonaphthol, 4-chlorophenol, 6-  
4 iodonaphthol, 4-bromophenol, 4,4'-dihydroxybiphenyl, 4-iodophenol, 8-hydroxyquinoline,  
5 4-nitronaphthol, 3-hydroxypyridine, 4-aminonaphthol, umbelliferone, 4-methylnaphthol,  
6 resorufin, 4-methoxynaphthol, 8-hydroxypyrene, 4-chloronaphthol, 9-hydroxyanthracene, 4-  
7 bromonaphthol, 6-nitro-9-hydroxyanthracene, 4-iodonaphthol, 3-hydroxyflavone, 6-  
8 methylnaphthol, fluorescein, 6-methoxynaphthol, 3-hydroxybenzoflavone, 1-hydroxy-2-  
9 propyne, 1-hydroxy-4-pentyne, 1-hydroxy-3-butyne, 1-hydroxy-5-hexyne, Methanol, Ethanol,

10 Propanol, Isopropanol, Butanol, Tert-butanol, Hexanol, Cyclohexanol, Heptanol, Octanol,  
11 Decanol, Undecanol, Dodecanol, 1-acetoxymethanol (CH<sub>3</sub>OCCH<sub>2</sub>-O-NTP), 2-  
12 acetoxymethanol, 3-acetoxymethanol, 4-acetoxymethanol, 5-acetoxypentanol, 6-acetoxymethanol,  
13 2-nitroethanol, 3-nitropropanol, 4-nitrobutanol, 5-nitropentanol, 5-nitrohexanol, 1-hydroxy-3-  
14 propene, 1-hydroxy-2-cyclohexene, 1-hydroxy-4-butene, 1-hydroxy-3-propaldehyde, 1-  
15 hydroxy-5-pentene, 1-hydroxy-4-butanaldehyde, 1-hydroxy-6-hexene, 1-hydroxy-3-  
16 Butanone, Phenol, 4-methyl-3-hydroxypyridine, 4-Carboxyphenol, 5-methoxy-3-  
17 hydroxypyridine, 4-Acetoxymethylphenol, 5-nitro-3-hydroxypyridine, 4-nitrophenol, 5-  
18 acetoxymethyl-3-hydroxypyridine, 4-methylphenol, 6-methyl-8-hydroxyquinoline, 4-  
19 methoxyphenol 6-methoxy-8-hydroxyquinoline, 4-ethylphenol, 4-methyl-8-  
20 hydroxyquinoline, 4-butylphenol, 6-nitro-8-hydroxyquinoline, naphthol, 4-acetoxymethyl-8-  
21 hydroxyquinoline, 4 or 6 or 8 methylnaphthol pyrene, 4 or 6 or 8 methoxynaphthol, 6-methyl-  
22 8-hydroxypyrene, 4 or 6 or 8 nitronaphthol, 6-ethyl-8-hydroxypyrene, 4 or 6 or 8  
23 ethylnaphthol, 6-nitro-8-hydroxypyrene, 4 or 6 or 8 butylnaphthol 6-  
24 (carboxysuccinimidylester) fluorescein, 4 or 6 or 8 acetoxymethylnaphthol, 6-carboxymethyl-  
25 2,7-dichlorofluorescein, Methanol Cyclohexanol, 2-carboxy ethanol, 3-carboxypropanol, 4-  
26 carboxybutanol, 2-hydroxyethanol, 3-hydroxypropanol, 4-hydroxybutanol, 2-aminoethanol,  
27 2-nitroethanol, 3-aminopropanol, 3-nitropropanol, 4-aminobutanol, and 4-nitrobutanol.

1 46.(previously added) The kit of claim 42, wherein the modified nucleotide is selected  
2 from the group consisting of Adenosine-5'- ( $\gamma$ -ANS) triphosphate, Guanosine-5'- ( $\gamma$ -ANS)  
3 triphosphate, Cytosine-5'- ( $\gamma$ -ANS) triphosphate, Thymidine-5'- ( $\gamma$ -ANS) triphosphate,  
4 Adenosine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-iodonaphthyl), Guanosine-  
5 5'- ( $\gamma$ -4-nitrophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -6-methylnaphthyl)  
6 triphosphate, Cytosine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate, Thymidine-5'- ( $\gamma$ -4-nitrophenyl)  
7 triphosphate, Adenosine-5'- ( $\gamma$ -6-methoxynaphthyl) triphosphate, Uracil-5'- ( $\gamma$ -4-nitrophenyl)  
8 triphosphate, 3'-azido-3'-deoxythymidine-5'- ( $\gamma$ -4-nitrophenyl) triphosphate, Adenosine-5'- ( $\gamma$ -  
9 6-aminonaphthyl) triphosphate, 3'-azido-2', 3'-dideoxythymidine-5'- ( $\gamma$ -4-

10 nitrophenyl)triphosphate, Adenosine-5'-( $\gamma$ -6-nitronaphthyl) triphosphate, 2',3'-didehydro-2',  
11 3'-dideoxythymidine-5'-( $\gamma$ -4-nitrophenyl)triphosphate, Adenosine-5'-( $\gamma$ -6-chloronaphthyl)  
12 triphosphate, Adenosine-5'-( $\gamma$ -4-aminophenyl) triphosphate, Adenosine-5'-( $\gamma$ -6-  
13 bromonaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -4-methylphenyl) triphosphate, Adenosine-5'-( $\gamma$ -6-  
14 ( $\gamma$ -6-iodonaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -4-methoxyphenyl) triphosphate,  
15 Adenosine-5'-( $\gamma$ -4'-hydroxybiphenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-chlorophenyl)  
16 triphosphate, Adenosine-5'-( $\gamma$ -8-quinolyl) triphosphate, Adenosine-5'-( $\gamma$ -4-bromophenyl)  
17 triphosphate, Adenosine-5'-( $\gamma$ -3-pyridyl) triphosphate, Adenosine-5'-( $\gamma$ -umbelliferone),  
18 Adenosine-5'-( $\gamma$ -4-iodophenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-nitronaphthyl)  
19 triphosphate, Adenosine-5'-( $\gamma$ -resorufin) triphosphate, Adenosine-5'-( $\gamma$ -pyrene)  
20 triphosphate, Adenosine-5'-( $\gamma$ -4-aminonaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -anthracene)  
21 triphosphate, Adenosine-5'-( $\Gamma$ -6-nitroanthracene) triphosphate, Adenosine-5'-( $\gamma$ -4-  
22 methylnaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -flavonyl) triphosphate, Adenosine-5'-( $\gamma$ -4-  
23 methoxynaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -fluorescein) triphosphate, Adenosine-5'-( $\gamma$ -  
24 benzoflavone) triphosphate, Adenosine-5'-( $\gamma$ -4-chloronaphthyl) triphosphate, Adenosine-  
25 5'-( $\gamma$ -(4-nitrophenyl)- $\gamma'$ -(4-aminophenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-  
26 bromonaphthyl) triphosphate, Adenosine-5'-( $\gamma$ -(4-nitrophenyl)- $\gamma'$ -(4-nitronaphthyl)  
27 triphosphate, Adenosine-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -  
28 acetoxypropyl)triphosphate, Guanosine-5'-( $\gamma$ -methyl) triphosphate, Cytosine-5'-( $\gamma$ -methyl)  
29 triphosphate, Adenosine-5'-( $\gamma$ -acetoxyethyl)triphosphate (CH<sub>3</sub>OCCCH<sub>2</sub>-O-NTP),  
30 Thymidine-5'-( $\gamma$ -methyl) triphosphate, Uracil-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -  
31 acetoxyethyl) triphosphate, 3'-azido-3'-deoxythymidine-5'-( $\gamma$ -methyl)triphosphate,  
32 Adenosine-5'-( $\gamma$ -acetoxybutyl)triphosphate, 3'-azido-2',3'-dideoxythymidine-5'-( $\gamma$ -methyl)  
33 triphosphate, Adenosine-5'-( $\gamma$ , acetoxyethyl) triphosphate,2', 3'-didehydro-2', 3'-  
34 dideoxythymidine-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -acetoxyhexyl) triphosphate,  
35 Adenosine-5'-( $\gamma$ -ethyl) triphosphate, Adenosine-5'-( $\gamma$ -2-nitroethyl) triphosphate,  
36 Adenosine-5'-( $\gamma$ -propyl) triphosphate, Adenosine-5'-( $\gamma$ -4-butyl) triphosphate, Adenosine-5'-( $\gamma$ -  
37 ( $\gamma$ -3-nitropropyl) triphosphate, Adenosine-5'-( $\gamma$ -hexyl) triphosphate, Adenosine-5'-( $\gamma$ -octyl)

38 triphosphate, Adenosine-5'- ( $\gamma$ -4-nitrobutyl)triposphate, Adenosine-5'- ( $\gamma$ -decyl)  
39 triphosphate, Adenosine-5'- ( $\gamma$ -dodecyl) triphosphate, Adenosine-5'- ( $\gamma$ -5-  
40 nitropentyl)triposphate, Adenosine-5'- ( $\gamma$ -isopropyl) triphosphate, Adenosine-5'- ( $\gamma$ -tert-  
41 butyl) triphosphate, Adenosine-5'- ( $\gamma$ -methyl)- ( $\gamma'$ -ethyl) triphosphate, Adenosine-5'- ( $\gamma$ -  
42 cyclohexyl) triphosphate, Adenosine-5'- ( $\gamma$ -methyl)- ( $\gamma'$ -propyl) triphosphate, Adenosine-5'-  
43 ( $\gamma$ -2-propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -3-but enyl) triphosphate, Guanosine-5'- ( $\gamma$ -2-  
44 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-pentenyl) triphosphate, Cytosine-5'- ( $\gamma$ -2-  
45 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -5-hexenyl) triphosphate, Thymidine-5'- ( $\gamma$ -2-  
46 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -cyclohexenyl) triphosphate, Uracil-5'- (7-2-  
47 propenyl) triphosphate, Adenosine-5'- ( $\gamma$ -3-propanaldehyde) triphosphate, 3'-azido-3'-  
48 deoxythymidine-5'- ( $\gamma$ -2-propenyl) triphosphate, Adenosine-5'-( $\gamma$ -4-butanaldehyde)  
49 triphosphate, 3'-azido-2',3'-dideoxythymidine-5'- ( $\gamma$ -2-propenyl) triphosphate, Adenosine-5'-  
50 ( $\gamma$ -3-butanone) triphosphate, 2', 3'-didehydro-2', 3'-dideoxythymidine-5'- ( $\gamma$ -2-propenyl)  
51 triphosphate, Adenosine-5'- ( $\gamma$ -2-propynyl) triphosphate, 3'-azido-2', 3'-dideoxythymidine-5'-  
52 ( $\gamma$ -2-propynyl) triphosphate, Guanosine-5'- ( $\gamma$ -2-propynyl) triphosphate, Cytosine-5'- ( $\gamma$ -2-  
53 propynyl) triphosphate, 2', 3'-didehydro-2', 3'-dideoxythymidine-5'- ( $\gamma$ -2-propynyl)  
54 triphosphate Thymidine 5'- ( $\gamma$ -2-propynyl) triphosphate, Uracil-5'- ( $\gamma$ -2-propynyl)  
55 triphosphate, Adenosine-5'- ( $\gamma$ -3-butynyl) triphosphate, 3'-azido-3'-deoxythymidine-5'- ( $\gamma$ -2-  
56 propynyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-pentynyl) triphosphate, Adenosine-5'- ( $\gamma$ -5-  
57 pentynyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (4 or 6  
58 or 8 acetoxymethyl naphthyl) triphosphate, Guanosine-5'- ( $\gamma$ -4-phenyl) triphosphate,  
59 Cytosine-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (4-methylpyridyl)triposphate,  
60 Thymidine-5'- ( $\gamma$ -4-phenyl) triphosphate, Uracil-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'-  
61 ( $\gamma$ - (5-methoxypyridyl)triposphate, 3'-azido-3'-deoxythymidine-5'- ( $\gamma$ -4-phenyl)  
62 triphosphate, Adenosine-5'- ( $\gamma$ - (5-nitropyridyl)triposphate, 3'-azido-2',3'-dideoxythymidine-  
63 5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (5-acetoxymethylpyridyl) triphosphate, 2',  
64 3'-didehydro-2', 3'-dideoxythymidine-5'- ( $\gamma$ -4-phenyl) triphosphate, Adenosine-5'- ( $\gamma$ - (6-  
65 methyl-1-quinolyl) triphosphate, Adenosine-5'- ( $\gamma$ -4-carboxyphenyl) triphosphate,

66 Adenosine-5'-( $\gamma$ -(6-methoxy-1-quinolyl)triphosphate, Adenosine-5'-( $\gamma$ -(4-acetoxyethyl)  
67 phenyl) triphosphate, Adenosine-5'-( $\gamma$ -(4-methyl-1-quinolyl)triphosphate, Adenosine-5'-( $\gamma$ -4-nitrophenyl)  
68 triphosphate, Adenosine-5'-( $\gamma$ -4-methylphenyl)triphosphate, Adenosine-5'-( $\gamma$ -(6-nitro-1-quinolyl)  
69 triphosphate, Adenosine-5'-( $\gamma$ -4-methoxyphenyl) triphosphate, Adenosine-5'-( $\gamma$ -(4-acetoxyethylpyrenyl)  
70 triphosphate, Adenosine-5'-( $\gamma$ -4-ethylphenyl) triphosphate, Adenosine-5'-( $\gamma$ -(6-methylpyrenyl)  
71 triphosphate, Adenosine-5'-( $\gamma$ -butylphenyl) triphosphate, Adenosine 5'-( $\gamma$ -naphthyl) triphosphate, Adenosine-5'-( $\gamma$ -6-  
72 ethylpyrenyl) triphosphate, Adenosine-5'-( $\gamma$ -(4 or 6 or 8 methyl naphthyl)triphosphate,  
73 Adenosine-5'-( $\gamma$ -(6-nitropyrenyl) triphosphate, Adenosine-5'-( $\gamma$ -(4 or 6 or 8 methoxynaphthyl)  
74 triphosphate, Adenosine-5'-( $\gamma$ -(4 or 6 or 8 nitro naphthyl)triphosphate. Adenosine-5'-( $\gamma$ -6-  
75 carboxymethyl-2, 7-dichlorofluorescein) triphosphate, Adenosine-5'-( $\gamma$ -(4 or 6 or 8 ethyl  
76 naphthyl) triphosphate, Adenosine-5'-( $\gamma$ -4-phenyl)-( $\gamma'$ -4 nitrophenyl) triphosphate,  
77 Adenosine-5'-( $\gamma$ -(4 or 6 or 8 butyl naphthyl)triphosphate, Adenosine-5'-( $\gamma$ -4-phenyl)-( $\gamma'$ -4  
78 aminophenyl)triphosphate, Adenosine-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -3-  
79 aminopropyl) triphosphate, Guanosine-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -4-  
80 aminobutyl) triphosphate, Cytosine-5'-( $\gamma$ -methyl) triphosphate Adenosine-5'-( $\gamma$ -cyclohexyl)  
81 triphosphate, Thymidine-5'-( $\gamma$ -methyl) triphosphate Adenosine-5'-( $\gamma$ -2-carboxyethyl)  
82 triphosphate, Uracil-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -3-carboxypropyl)triphosphate,  
83 3'-azido-3'-deoxythymidine-5'-(7-methyl) triphosphate, Adenosine-5'-( $\gamma$ -4-carboxybutyl)  
84 triphosphate, 3'-azido-2',3'-dideoxythymidine-5'-( $\gamma$ -methyl) triphosphate, Adenosine-5'-( $\gamma$ -2-hydroxyethyl)  
85 triphosphate, 2',3'-didehydro-2',3'-dideoxythymidine-5'-( $\gamma$ -methyl)triphosphate, Adenosine-5'-( $\gamma$ -3-hydroxypropyl)  
86 triphosphate; Adenosine-5'-( $\gamma$ -ethyl) triphosphate, Adenosine-5'-( $\gamma$ -propyl) triphosphate,  
87 Adenosine-5'-( $\gamma$ -4-hydroxybutyl) triphosphate, Adenosine-5'-( $\gamma$ -4-butyl) triphosphate,  
88 Adenosine-5'-( $\gamma$ -2-nitroethyl) triphosphate, Adenosine-5'-( $\gamma$ -hexyl) triphosphate,  
89 Adenosine-5'-( $\gamma$ -3-nitropropyl) triphosphate, Adenosine-5'-( $\gamma$ -isopropyl) triphosphate,  
90 Adenosine-5'-( $\gamma$ -4-nitrobutyl) triphosphate, Adenosine-5'-( $\gamma$ -tert-butyl) triphosphate

94 , Adenosine-5'- (γ-methyl)- (γ'-ethyl)triphosphate, Adenosine-5'- (γ-cyclohexyl) triphosphate,  
95 Adenosine-5'- (γ-2-aminoethyl)triphosphate, and Adenosine-5'- (γ-methyl)- (γ'-propyl)  
96 triphosphate.

1      **47.(previously added)**     The kit of claim 15, wherein the polymerizing agent is selected  
2      from the group consisting of naturally occurring or synthetic polymerases and reverse  
3      transcriptases.